

**In the Claims**

1. (Previously Presented) A solenoid comprising:
  - a solenoid housing;
  - a magnetically conductive shell disposed within the solenoid housing and having a single coil of wound wire;
  - a movable magnetic object disposed within a bore of the single coil, the object configured to receive a magnetic force when current is induced in the single coil;
  - a permanent magnet disposed within the solenoid housing and having a fixed polarity that magnetically repels the moveable magnetic object when current is induced in the single coil and magnetically attracts an end of the movable magnetic object when no current is induced in the single coil;
  - a non-magnetic spacer disposed within the solenoid housing and disposed between the permanent magnet and the movable magnetic object; and
  - a return spring operationally connected to bias the movable magnetic object in a return position against the spacer when no current is induced in the single coil and the return spring at least partially disposed outside the solenoid housing.
2. (Original) The solenoid of claim 1 wherein the moveable magnetic object includes one of a plunger or an armature.
- 3-4. (Canceled)
5. (Previously Presented) The solenoid of claim 1 further comprising an end plate connected to an end opposite to that of the return spring and an attracting stud connected to the end plate, the attracting stud having a polarity opposite to that of the movable magnetic object when current is induced with a specific electrical polarity in the single coil.
6. (Previously Presented) The solenoid of claim 5 further comprising a bobbin disposed within the housing.
7. (Original) The solenoid of claim 6 wherein the single coil is wrapped around the bobbin.

8. (Original) The solenoid of claim 7 further comprising a number of shunt components connected to the bobbin.

9. (Previously Presented) The solenoid of claim 8 wherein the number of shunt components is configured such that as a distance of the shunt components from the permanent magnet increases a hold force between the plunger and permanent magnet decreases.

10. (Original) The solenoid of claim 8 further comprising an air gap between the number of shunt components and the housing.

11. (Currently Amended) An electromagnetic switching apparatus comprising:  
a bobbin having a single coil of wire wrapped therearound;  
a movable armature disposed within the single coil;  
a permanent magnetic separated from the armature by a non-magnetic spacer wherein the permanent magnet magnetically attracts the armature when the single coil is de-energized and magnetically repels the armature when the single coil is energized, wherein the non-magnetic spacer remains in a fixed position during movement of the movable armature; and  
a return spring positioned to bias the armature ~~in cooperation with~~ in a same direction as the magnetic attraction of the permanent magnet.

12. (Original) The apparatus of claim 11 further comprising an end plate and attracting stud connected to one end of the bobbin wherein the attracting stud attracts the armature when the single coil is energized.

13. (Previously Presented) The apparatus of claim 12 wherein the return spring is configured to bias the armature against the spacer when the single coil is de-energized.

14. (Original) The apparatus of claim 13 wherein the armature is further configured to have a first polarity when the single coil is de-energized and a second polarity when the single coil is energized.

15. (Original) The apparatus of claim 14 wherein the second polarity matches a plurality of the permanent magnet.

16. (Original) The apparatus of claim 14 wherein the second polarity is opposite to a polarity of the end plate.

17. (Original) The apparatus of claim 11 further comprising a plurality of shunt components disposed radially around the actuator between the single coil and the permanent magnet.

18-27. (Canceled)

28. (Previously Presented) A solenoid comprising:

- a magnetically conductive shell having a single coil of wound wire;
- a movable magnetic object disposed within a bore of the single coil, the object configured to receive a magnetic force when current is induced in the single coil;
- a permanent magnet having a fixed polarity that magnetically repels the moveable magnetic object when current is induced in the single coil and magnetically attracts an end of the movable magnetic object when no current is induced in the single coil;
- a non-magnetic spacer disposed between the permanent magnet and the movable magnetic object;
- a return spring operationally connected to bias the movable magnetic object in a return position against the spacer when no current is induced in the single coil;
- an end plate connected to an end opposite to that of the return spring and an attracting stud connected to the end plate, the attracting stud having a polarity opposite to that of the movable magnetic object when current is induced with a specific electrical polarity in the single coil;
- a housing having the single coil, the plunger, the spacer, and a bobbin disposed therein, wherein the single coil is wrapped around the bobbin; and
- a number of shunt components arranged stationary with respect to the bobbin, wherein the number of shunt components is configured such that as a distance of the shunt components from the permanent magnet is increased a hold force between the plunger and permanent magnet is decreased.

29. (Previously Presented) A solenoid comprising:
- a magnetically conductive shell having a single coil of wound wire;
  - a movable magnetic object disposed within a bore of the single coil, the object configured to receive a magnetic force when current is induced in the single coil;
  - a permanent magnet having a fixed polarity that magnetically repels the moveable magnetic object when current is induced in the single coil and magnetically attracts an end of the movable magnetic object when no current is induced in the single coil;
  - a non-magnetic spacer disposed between the permanent magnet and the movable magnetic object;
  - a return spring operationally connected to bias the movable magnetic object in a return position against the spacer when no current is induced in the single coil;
  - an end plate connected to an end opposite to that of the return spring and an attracting stud connected to the end plate, the attracting stud having a polarity opposite to that of the movable magnetic object when current is induced with a specific electrical polarity in the single coil;
  - a housing having the single coil, the plunger, the spacer, and a bobbin disposed therein, wherein the single coil is wrapped around the bobbin;
  - a number of shunt components connected to the bobbin; and
  - an air gap between the number of shunt components and the housing.